**1. Write a Python program to check if the given number is a Disarium Number?**

def is\_disarium(number):

num\_str = str(number)

length = len(num\_str)

sum = 0

for i in range(length):

sum += int(num\_str[i]) \*\* (i + 1)

return sum == number

# Test the function with some examples

print(is\_disarium(135)) # True

print(is\_disarium(89)) # True

print(is\_disarium(175)) # False

**2. Write a Python program to print all disarium numbers between 1 to 100?**

def is\_disarium(number):

num\_str = str(number)

length = len(num\_str)

sum = 0

for i in range(length):

sum += int(num\_str[i]) \*\* (i + 1)

return sum == number

# Print all Disarium numbers between 1 and 100

for i in range(1, 101):

if is\_disarium(i):

print(i)

**3. Write a Python program to check if the given number is Happy Number?**

def is\_happy(number):

seen = set()

while number != 1 and number not in seen:

seen.add(number)

number = sum([int(i) \*\* 2 for i in str(number)])

return number == 1

# Get user input

number = int(input("Enter a number: "))

# Check if the number is a Happy Number

if is\_happy(number):

print(f"{number} is a Happy Number.")

else:

print(f"{number} is not a Happy Number.")

**4. Write a Python program to print all happy numbers between 1 and 100?**

def is\_happy(number):

seen = set()

while number != 1 and number not in seen:

seen.add(number)

number = sum([int(i) \*\* 2 for i in str(number)])

return number == 1

# Print all Happy Numbers between 1 and 100

for i in range(1, 101):

if is\_happy(i):

print(i)

#1, 7, 10,……..are happy numbers

**5. Write a Python program to determine whether the given number is a Harshad Number?**

def is\_harshad(num):

num\_str = str(num)

sum\_of\_digits = 0

for digit in num\_str:

sum\_of\_digits += int(digit)

return num % sum\_of\_digits == 0

# Test the function

print(is\_harshad(18)) # True

print(is\_harshad(19)) # False

**6. Write a Python program to print all pronic numbers between 1 and 100?**

def is\_pronic(num):

i = 1

while i \* (i + 1) <= num:

if i \* (i + 1) == num:

return True

i += 1

return False

# Print all pronic numbers between 1 and 100

for i in range(1, 101):

if is\_pronic(i):

print(i)